AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for computing a production plan, comprising the steps of:
a). solving a linear program to determine a production plan that is consistent with operational objectives and production constraints;
b). sequencing production start variables based on start date, position in [[the]] a bill-of-material, and degree of infeasibility; and
c). modifying production starts in this sequence[[,]] and according to a branching strategy, such that ~~the resulting solution satisfies~~ lot-size constraints and production constraints are satisfied.

2. (Original) The method of claim 1, wherein the branching strategy involves branching multiple variables in each iteration, until an infeasible linear program is encountered, after which branching is reset to one variable at a time.

3. (Original) The method of claim 1, wherein the step of sequencing production start variables with respect to the position of a part number in the bill-of-material is obtained from raw materials to end products.

4. (Original) The method of claim 1, wherein the step of sequencing production start variables uses a branching strategy based on branching up and subsequently branching down if either (a) a linear program resulting from branching up is infeasible or (b) a change in the objective function due to branching up exceeds a predefined tolerance.

5. (Currently Amended) The method of claim 1, wherein the lot-size constraints may be defined by a set of ~~permissible~~ possible values.

6. (Currently Amended) The method of claim 1, wherein the lot-size constraints may be defined by an arbitrary or discrete set of ~~permissible~~ possible values.

7. (Currently Amended) A method for improving a production plan [[of]] comprising;
a). separating production start variables into a plurality of sub-problems;

b). relaxing imposed lot-sizing constraints using linear programming methods;
c). determining if an improved solution to the sub-problem is feasible; and
d). updating a global solution to reflect local improvements determined from solving the sub-problems.

8. (Currently Amended) The method of claim 7, wherein the step of separating production start variables into sub-problems is based on assembly and component relationships in [[the]] a bill-of-material.

9. (Original) The method of claim 8, where the method further comprises iteratively solving sub-problems until no solution improvement is made in any of the sub-problems or as user defined run time limit is exceeded.

10. (Currently Amended) The method of claim 9, wherein [[the]] a relaxed linear program contains production operation constraints.

11. (Original) The method of claim 10, wherein the relaxed linear program considers production operation constraints of capacity, inventory, supply, sourcing, and backordering.

12. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for determining a production plan, said method steps comprising:
a). solving a linear program to determine a production plan that is consistent with operational objectives and production constraints;
b). sequencing production start variables based on start date, position in [[the]] a bill-of-material, and degree of infeasibility; and
c). modifying production starts in this sequence[[,]] and according to a branching strategy, such that ~~the resulting solution satisfies~~ lot-size constraints and production constraints are satisfied.

13. (Original) The program storage device of claim 12, wherein the branching strategy involves

branching multiple variables in each iteration, until an infeasible linear program is encountered, after which branching is reset to one variable at a time.

14. (Original) The program storage device of claim 12, wherein the step of sequencing production start variables with respect to the position of a part number in the bill-of-material is obtained from raw materials to end products.

15. (Original) The program storage device of claim 12, wherein the step of sequencing production start variables uses a branching strategy based on branching up and subsequently branching down if either (a) a linear program resulting from branching up is infeasible or (b) a change in the objective function due to branching up exceeds a predefined tolerance.

16. (Currently Amended) The program storage device of claim 12, wherein the lot-size constraints may be by a set of ~~permissible~~ possible values.

17. (Currently Amended) The program storage device of claim 12, wherein the lot-size constraints may be defined by an arbitrary or discrete set of ~~permissible~~ possible values.

18. (Original) A program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for improving a production plan, said method steps comprising:
a). separating production start variables into a plurality of sub-problems;
b). relaxing imposed lot-sizing constraints using linear programming methods;
c). determining if an improved solution to the sub-problem is feasible; and
d). updating a global solution to reflect local improvements determined from solving the sub-problems.

19. (Currently Amended) The program storage device of claim 18, wherein the step of separating production start variables into sub-problems is based on assembly and component relationships in [[the]] a bill-of-material.

20. (Original) The program storage device of claim 19, whercin the method further comprises iteratively solving sub-problems until no solution improvement is made in any of thc sub-problems or as user defined run time limit is exceeded.

21. (Currently Amendcd) Thc program storage device of claim 20, wherein [[the]] a relaxcd linear program contains production operation constraints.

22. (Original) The program storage device of claim 20, wherein the relaxed linear program considers production operation constraints of capacity, inventory, supply, sourcing, and backordering.